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PRELIMINARY REPORT
INDUSTRY SERIES

1987 Census of Manufactures

MC87-I-28H(P)
Issued July 1989

MISCELLANEOUS CHEMICAL PRODUCTS

Industries 2891, 2892, 2893, 2895, and 2899

INTRODUCTION

This report presents preliminary statistics from the 1987 Census of Manufactures for those establishments classified in the industries listed above. These data will be superseded by a more comprehensive final paperbound report. The method of data collection and use of administrative data are discussed in detail in the appendix.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The definitions of these industries are the same as those used in the 1987 Standard Industrial Classification (SIC) Manual.[1]

INDUSTRY 2891, ADHESIVES AND SEALANTS

In the 1987 Census of Manufactures, Industry 2891, Adhesives and Sealants, had employment of 21.0 thousand. The employment figure was 15 percent above the 18.2 thousand reported in 1982. Compared with 1986, employment in 1987 increased 9 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $4.7 billion.

In 1987, establishments in this industry accounted for 88 percent of products considered primary to the industry regardless of the industry in which they were produced (coverage ratio). In 1982, the coverage ratio was 84. The products primary to this industry appear in table 2 and aggregated to $4.5 billion in 1987.

The cost of materials and services used by establishments in this industry amounted to $2.7 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 2892, EXPLOSIVES

In the 1987 Census of Manufactures, Industry 2892, Explosives, had employment of 13.8 thousand. The employment figure was 12 percent above the 12.3 thousand reported in 1982. Compared with 1986, employment in 1987 increased 6 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $1.1 billion.

In 1987, establishments in this industry accounted for 94 percent of products considered primary to the industry regardless of the industry in which they were produced (coverage ratio). In 1982, the coverage ratio was 96. The products primary to this industry appear in table 2 and aggregated to $743.6 million in 1987.

The cost of materials and services used by establishments in this industry amounted to $363.3 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 2893, PRINTING INK

In the 1987 Census of Manufactures, Industry 2893, Printing Ink, had employment of 11.0 thousand. The employment figure was 11 percent above the 9.9 thousand

[1] **Standard Industrial Classification Manual: 1987.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

Address inquiries to Bureau of the Census, Industry Division, Washington, DC 20233, or call **David J. Gromos** (301) 763-2510.

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reported in 1982. Compared with 1986, employment in 1987 increased 11 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $2.4 billion.

In 1987, establishments in this industry accounted for 97 percent of products considered primary to the industry regardless of the industry in which they were produced (coverage ratio). In 1982, the coverage ratio was also 97. The products primary to this industry appear in table 2 and aggregated to $2.3 billion in 1987.

The cost of materials and services used by establishments in this industry amounted to $1.5 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 2895, CARBON BLACK

In the 1987 Census of Manufactures, Industry 2895, Carbon Black, had employment of 1.8 thousand. The employment figure was 14 percent below the 2.1 thousand reported in 1982. Compared with 1986, employment in 1987 remained the same. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $569.6 million.

In 1987, establishments in this industry accounted for 100 percent of products considered primary to the industry regardless of the industry in which they were produced (coverage ratio). The products primary to this industry appear in table 2 and aggregated to $569.6 million in 1987.

The cost of materials and services used by establishments in this industry amounted to $306.8 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.

In the 1987 Census of Manufactures, Industry 2899, Chemical Preparations, N.E.C., had employment of 37.7 thousand. The employment figure was 5 percent below the 39.7 thousand reported in 1982. Compared with 1986, employment in 1987 decreased 1 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $8.0 billion.

In 1987, establishments in this industry accounted for 85 percent of products considered primary to the industry regardless of the industry in which they were produced (coverage ratio). In 1982, the coverage ratio was 84. The products primary to this industry appear in table 2 and aggregated to $7.3 billion in 1987.

The cost of materials and services used by establishments in this industry amounted to $3.8 billion in 1987. Data on specific materials consumed appear in table 3.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

CONTACTS FOR DATA USERS

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Census/ASM		
Durables	Kenneth Hansen	(301) 763-7304
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Durables	Malcolm Bernhardt	(301) 763-2518
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Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Year[1]	All establishments[3]		All employees		Production workers			Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories[4] (million dollars)	Ratios	
	Companies[2] (no.)	Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					Specialization (percent)	Coverage (percent)
INDUSTRY 2891, ADHESIVES AND SEALANTS														
1987 Census	(NA)	712	275	21.0	553.3	11.9	24.3	256.6	1 996.5	2 701.5	4 685.1	111.8	476.1	91	88
1986 ASM	(NA)	(NA)	(NA)	19.3	441.8	11.6	22.4	211.6	1 596.4	2 233.3	3 838.3	82.8	398.3	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	18.4	420.6	11.4	22.1	204.7	1 528.7	2 147.4	3 672.0	74.3	380.5	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	18.5	415.8	11.4	22.3	199.3	1 428.5	2 075.0	3 488.2	55.8	383.0	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	18.2	384.5	10.8	20.9	184.7	1 209.0	1 909.8	3 118.5	[4]42.0	362.3	(NA)	(NA)
1982 Census	518	684	234	18.2	366.0	10.9	20.7	173.2	1 151.4	1 699.9	2 857.9	70.1	362.6	90	84
1981 ASM[5]	(NA)	(NA)	(NA)	17.0	310.6	10.3	20.0	146.8	1 188.4	1 545.9	2 707.8	73.7	314.1	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	16.8	279.1	9.5	19.1	128.0	1 046.1	1 325.3	2 353.9	[4]78.1	263.9	(NA)	(NA)
1979 ASM[5]	(NA)	(NA)	(NA)	17.8	292.7	10.1	20.1	122.9	1 043.2	1 313.1	2 340.2	62.9	238.4	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	16.8	249.4	10.2	20.3	119.0	865.4	1 132.1	1 980.1	54.4	221.8	(NA)	(NA)
1977 Census	403	572	212	16.6	230.2	10.2	20.5	113.5	748.8	1 067.1	1 808.1	38.9	201.8	89	81
1976 ASM	(NA)	(NA)	(NA)	14.3	190.9	8.3	16.8	85.0	637.9	891.5	1 516.1	27.2	173.3	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	15.1	192.8	8.2	15.9	78.4	595.7	820.1	1 404.5	43.2	177.3	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	15.7	182.1	9.0	17.8	80.0	610.0	781.4	1 369.3	44.7	174.0	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	16.2	173.3	9.4	19.4	82.6	520.4	621.1	1 137.0	36.6	127.6	(NA)	(NA)
1972 Census	316	463	187	14.9	148.2	8.5	17.6	68.8	426.6	504.0	928.0	24.9	101.9	89	82
INDUSTRY 2892, EXPLOSIVES														
1987 Census	(NA)	129	45	13.8	351.0	9.2	17.9	205.7	782.8	353.3	1 118.5	22.6	133.1	99	94
1986 ASM	(NA)	(NA)	(NA)	13.0	331.8	8.5	16.0	185.3	667.7	351.7	1 020.3	32.2	122.6	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	13.2	325.4	8.8	16.6	184.7	740.8	379.5	1 110.7	[4]48.4	121.0	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	13.3	307.3	8.9	17.5	183.1	756.1	392.9	1 135.7	[4]34.9	120.2	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	12.0	266.9	7.9	14.9	156.0	612.7	308.9	919.7	22.0	135.1	(NA)	(NA)
1982 Census	73	114	45	12.3	253.3	7.9	15.1	144.1	580.7	340.8	922.7	32.9	101.1	91	96
1981 ASM	(NA)	(NA)	(NA)	12.0	223.8	7.9	15.5	131.8	589.9	406.6	995.0	30.7	78.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	12.5	221.3	8.9	18.1	139.6	574.0	354.4	927.0	39.3	69.2	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	11.2	178.4	7.9	15.2	107.4	480.3	347.1	819.7	24.5	72.8	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	11.8	179.3	8.0	15.3	106.9	433.7	271.6	696.5	25.2	71.0	(NA)	(NA)
1977 Census	62	97	53	12.3	173.2	8.4	16.1	101.4	410.7	258.3	666.3	26.1	59.8	86	[7]95
1976 ASM	(NA)	(NA)	(NA)	11.8	157.1	7.8	14.6	90.3	370.4	228.0	602.6	17.5	52.7	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	14.2	170.5	9.7	18.2	102.8	360.9	231.4	613.0	22.4	57.9	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	15.7	167.9	11.4	21.3	108.2	374.8	177.8	548.2	20.6	47.8	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	16.5	165.3	11.6	22.5	104.3	301.9	125.1	429.4	12.5	39.7	(NA)	(NA)
1972 Census	55	92	50	16.6	178.9	13.3	25.8	115.6	281.7	121.3	402.7	30.1	38.1	92	[7]95
INDUSTRY 2893, PRINTING INK														
1987 Census	(NA)	496	184	11.0	309.6	6.2	13.0	152.7	922.3	1 460.8	2 380.4	37.9	249.6	98	97
1986 ASM	(NA)	(NA)	(NA)	9.9	271.7	5.7	12.0	136.0	753.0	1 293.3	2 036.0	39.7	231.9	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	9.5	250.2	5.4	11.2	126.1	664.3	1 163.6	1 827.5	38.2	210.8	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	9.8	239.2	5.8	11.8	120.8	643.4	1 185.5	1 821.4	33.3	227.7	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	9.8	222.5	5.4	11.4	105.4	602.9	1 064.3	1 665.8	24.0	196.8	(NA)	(NA)
1982 Census	228	467	153	9.9	214.1	5.5	11.0	101.9	557.5	1 016.2	1 572.6	25.5	196.9	98	97
1981 ASM	(NA)	(NA)	(NA)	9.9	198.7	5.8	11.9	99.9	467.5	976.9	1 435.7	[4]32.9	164.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	9.7	179.8	5.8	11.8	90.8	448.2	846.0	1 285.8	[4]22.0	143.5	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	10.5	174.9	6.1	12.4	87.3	438.1	734.9	1 164.6	[4]20.9	142.3	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	10.5	161.2	6.0	11.7	77.0	420.9	633.0	1 045.4	[4]21.6	127.1	(NA)	(NA)
1977 Census	205	446	157	10.1	145.1	5.8	11.4	71.6	387.8	583.5	944.9	17.0	116.7	97	97
1976 ASM	(NA)	(NA)	(NA)	9.0	128.7	5.0	10.0	62.7	342.6	436.4	772.7	12.1	92.2	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	9.0	115.5	5.3	9.0	58.1	311.5	416.7	729.7	[4]17.9	92.3	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	8.8	100.8	5.4	10.5	53.3	283.2	364.4	640.1	14.0	95.0	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	9.8	105.3	6.1	12.1	55.4	240.7	311.9	550.5	7.4	76.1	(NA)	(NA)
1972 Census	213	407	145	9.6	99.3	5.8	12.1	49.8	232.0	281.7	508.4	12.6	67.9	95	93
INDUSTRY 2895, CARBON BLACK														
1987 Census	(NA)	22	21	1.8	64.7	1.4	3.0	46.2	272.6	306.8	569.6	39.2	57.6	100	100
1986 ASM	(NA)	(NA)	(NA)	1.8	63.1	1.3	3.0	44.8	243.9	315.3	570.2	23.2	44.4	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	1.9	60.8	1.4	3.1	44.0	288.8	425.3	715.0	40.3	60.0	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	1.9	63.1	1.5	3.2	45.6	312.4	505.6	804.5	46.2	70.3	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	2.0	57.1	1.4	3.1	41.4	170.3	440.8	623.9	[4]27.3	51.5	(NA)	(NA)
1982 Census	8	25	24	2.1	54.9	1.6	3.0	39.1	190.8	433.7	632.9	39.4	80.4	100	[7]95
1981 ASM	(NA)	(NA)	(NA)	2.3	54.9	1.7	3.4	39.5	202.1	528.6	721.1	54.7	51.2	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	2.3	52.5	1.7	3.6	37.7	131.9	363.7	498.0	27.7	45.9	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	2.4	49.7	1.9	4.3	37.6	186.8	367.9	547.3	[4]42.2	42.0	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	2.4	44.8	1.9	4.2	33.8	171.8	313.8	490.4	27.7	27.6	(NA)	(NA)
1977 Census	8	31	31	2.5	42.5	2.0	4.6	32.5	170.2	303.9	468.4	22.7	32.7	100	[7]95
1976 ASM	(NA)	(NA)	(NA)	2.4	38.4	1.9	4.4	29.1	133.3	231.7	367.0	19.5	28.3	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	2.3	32.7	1.8	4.0	24.2	99.9	204.9	306.5	30.5	29.0	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	2.9	35.2	2.3	5.1	27.1	141.0	201.4	330.0	16.6	37.5	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	2.9	33.0	2.3	5.0	25.4	133.6	106.1	239.5	14.2	19.2	(NA)	(NA)
1972 Census	11	37	33	2.9	31.9	2.3	5.1	24.1	137.6	88.9	227.0	11.8	18.1	100	[7]95
INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.														
1987 Census	(NA)	1 454	404	37.7	1 014.9	22.3	45.3	518.9	4 250.4	3 768.0	8 013.6	234.3	920.5	83	85
1986 ASM	(NA)	(NA)	(NA)	38.0	963.5	22.5	47.4	506.2	3 777.3	3 662.8	7 448.4	327.0	896.5	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	39.3	955.4	23.4	48.6	495.5	3 521.0	3 685.7	7 192.4	303.2	885.2	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	39.6	911.7	23.3	48.7	480.4	3 605.0	3 827.2	7 375.0	273.8	919.6	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	38.3	817.5	22.5	45.9	423.7	3 080.3	3 408.6	6 498.5	174.7	840.2	(NA)	(NA)
1982 Census	1 245	1 443	410	39.7	836.8	23.1	46.8	430.2	2 952.2	3 356.8	6 344.3	351.3	873.4	85	84
1981 ASM	(NA)	(NA)	(NA)	35.4	679.5	21.6	43.5	362.9	3 025.6	3 439.0	6 411.7	305.1	704.6	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	34.7	599.8	19.7	40.7	297.1	2 470.5	3 207.3	5 653.7	231.7	618.0	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	36.8	613.1	23.0	46.4	327.0	2 550.1	2 898.3	5 410.9	216.4	608.3	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	37.5	563.6	21.6	43.5	283.5	2 183.2	2 450.9	4 571.4	167.4	557.2	(NA)	(NA)

See footnotes at end of table.

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years—Con.

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix.]

Year[1]	Companies[2] (no.)	All establishments[3]		All employees		Production workers			Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories[4] (million dollars)	Ratios	
		Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Specialization (percent)	Coverage (percent)
	INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.—Con.														
1977 Census	1 479	1 639	384	35.3	483.4	20.7	41.5	242.0	1 841.7	2 122.5	3 950.6	182.6	456.5	87	77
1976 ASM	(NA)	(NA)	(NA)	36.6	461.1	22.0	42.3	228.5	1 634.8	1 930.4	3 545.0	244.9	477.5	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	34.7	407.6	20.6	39.6	196.6	1 409.2	1 616.0	3 009.2	147.4	439.7	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	37.7	405.0	22.7	44.2	203.0	1 489.4	1 700.1	3 127.8	97.2	436.3	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	35.8	382.0	22.1	44.8	184.7	1 171.6	1 301.0	2 466.5	79.5	300.5	(NA)	(NA)
1972 Census	1 485	1 606	360	37.1	356.0	22.6	43.9	176.0	1 124.7	1 086.4	2 202.3	71.3	254.7	84	75

Note: Establishments of single unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. Data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were estimated based on administrative-record information from other agencies in conjunction with industry averages. These establishments accounted for the following percent of total value of shipments: SIC 2891, 13%; SIC 2892, 10%; SIC 2893, 10%; SIC 2895, 0%; and SIC 2899, 17%.

[1]In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the industry chapter.

[2]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

[3]Includes establishments with payroll at any time during year.

[4]Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

[5]Data either have associated standard errors exceeding 15 percent or are not consistent with other census series and related data; thus, these estimates may be of limited reliability.

[6]Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

[7]Minimum percentage; exact percentage withheld to avoid disclosing data for individual companies.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
2891- —	**ADHESIVES AND SEALANTS**						
	Total	**(NA)**	**(X)**	**4 509.5**	**(NA)**	**(X)**	**2 903.0**
28913 —	Natural base glues and adhesives	(NA)	(X)	154.2	(NA)	(X)	177.5
	Animal glues:						
28913 11	Hide (dry forms) mil lb	(NA)	*31.9	25.8	4	*23.0	15.7
28913 26	Flexible, nonwarp, and liquid glue (not glue stock) do	(NA)	**38.2	20.1	8	*23.3	13.0
28913 50	Protein adhesives, including casein, blood, fish, soybean, albumen, etc. do	(NA)	29.2	15.1	11	*52.6	25.2
	Vegetable adhesives:						
28913 51	Dextrines mil lb	(NA)	*123.5	41.0	22	**136.7	41.2
28913 55	Starches do	(NA)	(S)	31.6	14	**81.7	30.1
28913 80	Other natural base glues and adhesives made from natural gums, shellac, silicates, lacquers, oleoresinous varnishes, etc., except rubber, including bone, green and extracted (dry forms), bituminous adhesives, asphaltic, and coal tar do	(NA)	(S)	19.5	16	**195.3	46.5
28913 00	Natural base glues and adhesives, n.s.k.	(NA)	(X)	1.2	(NA)	(X)	5.7
28914 —	Synthetic resin and rubber adhesives, including all types of bonding and laminating adhesives	(NA)	(X)	2 799.5	(NA)	(X)	1 833.8
28914 11	Epoxy adhesives mil lb	(NA)	(S)	161.9	48	**79.3	111.7
	Phenolics and derivatives adhesives:						
28914 23	Phenolics and modified phenolics mil lb	(NA)	1 244.5	218.8	18	697.4	154.6
28914 25	Resorcinol and modified resorcinol do	(NA)					
28914 33	Urea and modified urea do	(NA)	1 574.6	147.0	6	508.2	74.8
	Vinyl type adhesives:						
	Polyvinyl acetate:						
28914 41	Latex type mil lb	(NA)	*741.5	406.6	58	**506.1	262.2
28914 43	Solvent type do	(NA)	(S)	21.5	16	68.4	49.6
28914 45	Polyvinyl chloride and copolymers do	(NA)	**35.6	31.5	21	(S)	32.4
28914 47	Other vinyl polymer type adhesives do	(NA)	*29.1	18.9	20	*65.2	27.6
28914 53	Acrylic adhesives do	(NA)	(S)	122.8	28	145.8	96.3
28914 54	Cyanoacrylate adhesives do	(NA)	(S)	38.2	5	1.2	24.6
28914 55	Polyester adhesives do	(NA)	(S)	87.1	14	42.2	66.7
28914 57	Urethane adhesives do	(NA)	(S)	92.6	37	(X)	[3]
28914 65	Hot melt adhesives, including polyamide, polyolefin, and other hot melts do	(NA)	**328.5	375.6	32	**202.1	232.7
28914 71	Adhesive films, all types, including pressure-sensitive structural and nonstructural adhesive films do	(NA)	(S)	153.3	18	(S)	110.5
28914 48	Rubber and synthetic resin combinations do	(NA)	**628.5	345.6	41	**424.0	285.3
	Rubber cement, for sale as such:						
28914 81	Latex type mil gal	(NA)	(S)	54.6	26	(S)	65.7
28914 83	Solvent type do	(NA)	(S)	128.3	41	*25.3	123.8
28914 98	Other synthetic resin and rubber adhesives, including cellulose, nitrocellulose, polyamide, anaerobic, etc. mil lb	(NA)	(S)	230.8	37	(X)	361.4
28914 00	Synthetic resins and rubber adhesives, n.s.k.	(NA)	(X)	154.4	(NA)	(X)	54.0

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
2891- —	**ADHESIVES AND SEALANTS**—Con.						
28916 —	Structural sealants (load bearing)	(NA)	(X)	223.4	(NA)	(X)	(4)
	Synthetic base:						
28916 10	General performance sealants (PVAC, butyl, vinyl, acrylic, neoprene, etc.) mil lb	(NA)	(S)	38.2	(NA)	(NA)	(NA)
	Special performance sealants:						
28916 20	Polysulfide mil lb	(NA)					
28916 30	Silicone do	(NA)	**84.0	145.9	(NA)	(NA)	(NA)
28916 40	Epoxy, urethane, and others do	(NA)					
28916 50	Preformed tapes (butyl, polybutene, polyisobutylene, etc.) do	(NA)	(S)	33.3	(NA)	(NA)	(NA)
28916 00	Structural sealants (load bearing), n.s.k.	(NA)	(X)	6.0	(NA)	(X)	(NA)
28917 —	Nonstructural caulking compounds and sealants	(NA)	(X)	627.5	(NA)	(X)	(4)
	Natural base:						
28917 11	Caulks, modified and unmodified oil base mil lb	(NA)	(S)	43.3	15	(S)	27.8
28917 21	Bituminous base (coal tar or asphalt) do	(NA)	(S)	67.0	19	(S)	40.7
	Synthetic base:						
28917 31	General performance sealants (PVAC, butyl, vinyl, acrylic, neoprene, etc.) mil lb	(NA)	**359.9	241.3	(NA)	(NA)	(NA)
	Special performance sealants:						
28917 41	Polysulfide mil lb	(NA)					
28917 51	Silicone do	(NA)	(S)	190.0	(NA)	(NA)	(NA)
28917 61	Epoxy, urethane, and others do	(NA)					
28917 71	Preformed tapes (butyl, polybutene, polyisobutylene, etc.) do	(NA)	(S)	73.6	(NA)	(NA)	(NA)
28917 00	Nonstructural caulking compounds and sealants, n.s.k.	(NA)	(X)	12.3	(NA)	(X)	(NA)
28910 —	Adhesives and sealants, n.s.k.	(NA)	(X)	704.9	(NA)	(X)	288.9
28910 00	Adhesives and sealants, n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	528.8	(NA)	(X)	179.5
28910 02	Adhesives and sealants, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	176.1	(NA)	(X)	109.4
2892- —	**EXPLOSIVES**						
	Total	**(NA)**	**(X)**	**743.6**	**(NA)**	**(X)**	**587.6**
28920 —	Explosives, propellants, and blasting accessories, except those shipped by Government-owned, contractor-operated plants:						
	Industrial explosives:						
28920 13	Permissibles, including permissible slurries (approved by Bureau of Mines for underground coal mining) mil lb	(NA)	(D)	(D)	5	91.6	28.1
28920 15	Dynamites (nonpermissible) do	(NA)	(D)	(D)	7	(D)	(D)
28920 17	Ammonium nitrate, fuel sensitized (except slurry) do	(NA)	**931.3	91.1	12	795.1	71.3
	Water gel and slurries, except permissible slurries:						
28920 19	Cap sensitive mil lb	(NA)	148.7	48.8	7	130.3	70.7
28920 21	Noncap sensitive do	(NA)	70.5	20.1	7	153.4	42.9
28920 27	Other industrial explosives, including black blasting powder, shaped charges, liquid oxygen explosives, nitroglycerin for sale as such, etc. do	(NA)	(S)	36.2	9	25.3	43.1
28920 39	Propellants, including smokeless and black powder do	(NA)	(D)	(D)	5	18.6	73.3
	Blasting accessories:						
28920 51	Electric blasting caps mil units	(NA)	(D)	(D)	9	36.9	64.9
28920 57	Other blasting accessories (squibs, ignitors, detonating primers, fuses, detonating cord, and other nonelectric blasting caps, etc.)	(NA)	(X)	126.2	12	(X)	(D)
28920 71	Other explosives, including military detonators, jet starters, fuse and explosive assemblies, etc.	(NA)	(X)	119.4	10	(X)	34.1
28920 00	Explosives, n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	95.1	(NA)	(X)	17.9
28920 02	Explosives, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	10.6	(NA)	(X)	5.5

1987 product code	Product	1987				1982			
		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]	
				Quantity[2]	Value (million dollars)			Quantity[2]	Value (million dollars)
2893- —	**PRINTING INK**								
	Total	**(NA)**	**(X)**	**(X)**	**2 339.6**	**(NA)**	**(X)**	**(X)**	**1 518.7**
28931 —	Letterpress inks	(NA)	(X)	(X)	162.4	(NA)	(X)	(X)	128.0
28931 05	News inks mil lb	(NA)	**217.8	201.2	99.5	11	*198.8	*207.3	72.7
28931 06	Publication inks do	(NA)	(S)	(S)	9.8	11	*17.9	*16.6	14.3
28931 15	Packaging inks do	(NA)	(S)	12.1	27.4	13	*15.7	*15.8	26.1
28931 19	Other letterpress inks do	(NA)	17.7	16.5	20.9	13	**6.1	**5.4	11.5
28931 00	Letterpress inks, n.s.k.	(NA)	(X)	(X)	4.8	(NA)	(X)	(X)	3.4
28932 —	Lithographic and offset inks	(NA)	(X)	(X)	983.0	(NA)	(X)	(X)	536.4
28932 31	News inks mil lb	(NA)	*290.4	296.1	244.7	14	**170.5	**163.9	99.9
	Publication inks:								
28932 33	Web types mil lb	(NA)	(S)	*173.0	298.3	27	108.1	112.4	167.6
28932 34	Sheet types do	(NA)	(S)	**19.8	67.4	19	16.0	12.1	39.9
28932 35	Packaging inks do	(NA)	(S)	18.6	76.2	25	*21.2	*21.8	55.3
28932 38	Web commercial type do	(NA)	(S)	39.3	73.0	31	*37.1	*37.3	76.5

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987				1982			
		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]	
				Quantity[2]	Value (million dollars)			Quantity[2]	Value (million dollars)
2893- --	**PRINTING INK**—Con.								
28932 --	Lithographic and offset inks—Con.								
28932 45	Other lithographic and offset inks, including sheet commercial type ..... mil lb	(NA)	(S)	*50.8	162.8	49	*27.4	*28.2	92.0
28932 00	Lithographic and offset inks, n.s.k.	(NA)	(X)	(X)	60.6	(NA)	(X)	(X)	5.1
28933 --	Gravure inks	(NA)	(X)	(X)	411.8	(NA)	(X)	(X)	325.8
28933 43	Packaging inks ..... mil lb	(NA)	*113.9	110.6	152.6	18	*104.1	*106.4	118.3
28933 45	Publication inks ..... do	(NA)	305.0	293.8	248.2	7	249.3	246.6	198.7
28933 49	Other gravure inks ..... do	(NA)	(S)	**.9	1.4	11	**6.1	**6.4	8.5
28933 00	Gravure inks, n.s.k.	(NA)	(X)	(X)	9.6	(NA)	(X)	(X)	.3
28934 --	Flexographic inks	(NA)	(X)	(X)	424.9	(NA)	(X)	(X)	241.7
	Packaging inks:								
28934 82	Solvent types ..... mil lb	(NA)	(S)	116.2	186.8	21	82.9	82.8	117.7
28934 83	Water types ..... do	(NA)	(S)	122.4	171.4	29	*75.2	*76.6	87.2
	Other flexographic inks:								
28934 85	Solvent types ..... mil lb	(NA)	(S)	5.2	8.9	9	**8.8	**8.6	12.9
28934 86	Water types ..... do	(NA)	**20.5	19.8	31.0	10	15.4	14.9	16.2
28934 00	Flexographic inks, n.s.k.	(NA)	(X)	(X)	26.8	(NA)	(X)	(X)	7.7
28935 --	Printing inks, n.e.c.	(NA)	(X)	(X)	139.9	(NA)	(X)	(X)	143.8
28935 71	Textile printing inks ..... mil lb	(NA)	*34.7	36.1	45.3	12	37.5	38.1	45.5
28935 85	Screen printing inks ..... do	(NA)	(S)	(S)	59.6	17	14.7	14.9	48.5
28935 98	Other printing inks, including stencil inks ..... do	(NA)	(S)	(S)	34.0	20	*39.5	*40.4	49.5
28935 00	Printing inks, n.e.c., n.s.k.	(NA)	(X)	(X)	1.0	(NA)	(X)	(X)	2.3
28930 --	Printing ink, n.s.k.	(NA)	(X)	(X)	217.6	(NA)	(X)	(X)	143.1
28930 00	Printing inks, n.s.k., typically for establishments with 10 employees or more (see note)	(NA)	(X)	(X)	148.7	(NA)	(X)	(X)	100.5
28930 02	Printing inks, n.s.k., typically for establishments with less than 10 employees (see note)	(NA)	(X)	(X)	68.9	(NA)	(X)	(X)	42.6
2895- --	**CARBON BLACK**								
	Total	**(NA)**	**(X)**	**569.6**		**(NA)**	**(X)**	**652.7**	
28950 --	Carbon black (channel and furnace process only):								
28950 00	Carbon black (channel and furnace process only) ..... mil lb	7	2 808.3	569.6		8	2 392.7	652.7	
28950 02	Carbon black (channel and furnace process only) n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	-		(NA)	(X)	-	
2899- --	**CHEMICAL PREPARATIONS, N.E.C.**								
	Total	**(NA)**	**(X)**	**7 341.9**		**(NA)**	**(X)**	**6 101.0**	
28991 --	Evaporated salt:								
28991 00	Evaporated salt (bulk, pressed blocks, and packaged)[5] ..... 1,000 s tons	(NA)	*7 582.0	413.5		19	7 159.5	419.8	
28992 --	Fatty acids (produced for sale as such)	(NA)	(X)	426.5		(NA)	(X)	350.8	
	Saturated acids:								
28992 11	Stearic acid (40 to 50 percent stearic content) ..... mil lb	(NA)	236.7	73.9		3	176.9	54.6	
28992 23	Hydrogenated animal and vegetable acids: Hydrogenated fatty acids having a maximum titer of 60° C and a minimum I.V. of 5 ..... mil lb	(NA)	(D)	(D)		8	201.8	73.4	
28992 25	Hydrogenated fatty acids having a minimum titer of 57° C and a maximum I.V. less than 5 ..... do	(NA)	305.5	64.4		5	129.3	42.1	
28992 53	Coconut-type acids, I.V. 5 or more, including palm kernel and babassu, hydrogenated coconut acid ..... do	(NA)	(D)	(D)		5	106.0	30.4	
28992 55	Fractionated short-chain fatty acids, I.V. less than 5, such as caprylic, capric, lauric, and myristic ..... do	(NA)	(D)	(D)		4	66.0	27.8	
28992 57	Other saturated acids, including high palmitic (more than 60 percent palmitic, I.V. maximum 12) and hydrogenated fish and marine mammal fatty acids ..... do	(NA)	(D)	(D)		2	(D)	(D)	
	Unsaturated acids:								
28992 61	Oleic acid, including white oleic and red oil ..... mil lb	(NA)	133.7	42.6		4	(D)	(D)	
28992 83	Other unsaturated fatty acids, including animal fatty acids other than oleic (I.V. 36 to 80), vegetable or marine (I.V. maximum 115), and other unsaturated fatty acids (I.V. 116 or more) ..... do	(NA)	**214.5	54.9		5	*75.7	15.9	
	Tall oil fatty acids:								
28992 92	Tall oil fatty acids containing less than 2 percent rosin acids and more than 95 percent fatty acids ..... mil lb	(NA)	282.9	46.2		6	232.8	37.5	
28992 94	Tall oil fatty acids containing 2 percent or more rosin acids ..... do	(NA)	205.2	39.1		6	141.3	23.1	
28992 00	Fatty acids, n.s.k.	(NA)	(X)	7.3		(NA)	(X)	5.9	

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1987 product code	Product	1987			1982		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
2899- —	**CHEMICAL PREPARATIONS, N.E.C.**—Con.						
28994 —	Gelatin, except ready-to-eat desserts	(NA)	(X)	224.4	(NA)	(X)	242.3
28994 11	Food grade, excluding pharmaceutical and photographic — mil lb	(NA)	(S)	60.1	7	29.5	60.8
28994 31	Pharmaceutical grade, except unfilled capsules — do	(NA)	(S)	25.3	4	(S)	35.3
28994 97	Other gelatin products, excluding ready-to-eat desserts, including unfilled capsules, gelatin sheets for theatrical use, and photographic grade and technical (inedible) grade gelatin — do	(NA)	(S)	137.8	6	15.3	139.0
28994 00	Gelatin, except ready-to-eat desserts, n.s.k.	(NA)	(X)	1.2	(NA)	(X)	7.2
28995 —	Chemical preparations, n.e.c., including essential oils, automotive chemicals, and water-treating compounds	(NA)	(X)	5 048.4	(NA)	(X)	4 437.4
	Essential oils, unblended (natural):						
28995 11	Orange — mil lb	(NA)			6	40.3	14.5
28995 12	Lemon — do	(NA)			6	**5.2	34.1
28995 14	Spearmint oil — do	(NA)			3	1.3	16.2
28995 15	Peppermint oils derived from mentha piperita — do	(NA)	(S)	149.7	4	3.2	35.5
28995 19	Other natural essential oils, including cedar wood, clove, and nutmeg oils — do	(NA)			4	(S)	17.5
28995 25	Fireworks	(NA)	(X)	15.3			
28995 26	Pyrotechnics (including flares, jet fuel igniters, railroad torpedoes, toy pistol caps, etc.)	(NA)	(X)	76.8	24	(X)	95.4
	Chemical preparations, n.e.c.:						
28995 31	Rubber processing preparations, including red lead and 2-mercaptoimidazoline rubber accelerator composition — mil lb	(NA)	17.9	18.1	3	(D)	(D)
	Automotive chemicals:						
	Antifreeze preparations:						
28995 35	Permanent type — mil gal	(NA)	**89.6	371.2	21	145.4	381.4
28995 36	Other — do	(NA)	(D)	(D)	13	**11.3	64.1
28995 40	Antiknock compounds — do	(NA)	*4.6	2.6			
28995 42	Additives for lubricating oils — do	(NA)	(S)	9.8	65	(X)	201.2
28995 45	Other automotive chemicals, including battery acid, de-icing fluid, carbon-removing solvents, etc.	(NA)	(X)	192.2			
28995 39	Concrete curing and floor hardening materials — mil lb	(NA)	(S)	83.2	30	(S)	52.3
28995 41	Drilling mud materials, mud thinners, thickeners, and purifiers — do	(NA)	(S)	21.8	25	**705.2	340.6
28995 49	Foundry supplies, chemical (including binders, core oils, core wash, etc.)	(NA)	(X)	205.4	18	(X)	133.0
28995 53	Household tints and dyes — mil lb	(NA)	**5.1	20.6	4	(D)	(5)
28995 55	Insulation products (heat, electrical, other)	(NA)	(X)	18.3	5	(X)	(D)
28995 59	Metal-treating compounds (nonoil-base) for nitriding, pickling, drawing, and cutting	(NA)	(X)	157.9	41	(X)	210.8
28995 61	Oil-treating compounds (nonoil-base)	(NA)	(X)	94.5	12	(X)	90.7
	Sizes:						
28995 69	Textile — mil lb	(NA)	(S)	9.6			
28995 70	Paper — do	(NA)	517.7	155.9	13	*277.2	88.6
28995 71	Other — do	(NA)	(D)	(D)			
28995 72	Inks (writing and stamp pad ink, including indelible ink and marking fluid; excluding drawing and printing inks) — do	(NA)	(X)	41.6	18	(S)	26.1
	Water treating compounds:						
28995 73	Swimming pool chemical preparations	(NA)	(X)	240.1	22	(X)	169.6
28995 76	Cooling tower compounds — mil lb	(NA)	(S)	197.8	29	*165.3	138.0
28995 77	Boiler compounds — do	(NA)	(S)	167.1	38	*261.7	198.9
28995 78	Other water-treating compounds — do	(NA)	**654.9	460.6	47	*518.8	366.3
	Waterproofing compounds:						
28995 82	Textile	(NA)					
28995 83	Paper	(NA)	(X)	10.8	27	(X)	56.6
28995 84	Electrical, leather, and masonry, etc.	(NA)					
28995 88	Vitrifiable enamels — mil lb	(NA)	(D)	(D)			
28995 89	Glass frit — do	(NA)	69.1	39.9	9	**108.6	59.8
28995 91	Plating compounds — do	(NA)	(S)	245.8	21	(S)	292.2
28995 93	Lighter fluids (cigarette, charcoal, etc.) — mil gal	(NA)	(S)	58.9	9	*5.7	25.5
28995 94	Vegetable waxes	(NA)	(X)	(D)	18	(X)	33.5
28995 96	Other waxes, except petroleum, including blends	(NA)	(X)	52.9			
28995 98	Distilled water — mil gal	(NA)	(S)	29.7			
28995 99	Other industrial chemical specialties, including fluxes, plastics wood preparations, and embalming chemicals	(NA)	(X)	1 446.6	185	(X)	[6]1 084.1
28995 00	Chemical preparations, n.e.c., including essential oils, automotive chemicals, and water-treating compounds, n.s.k.	(NA)	(X)	448.6	(NA)	(X)	181.5
28990 —	Chemical preparations, n.e.c., n.s.k.	(NA)	(X)	1 229.1	(NA)	(X)	650.7
28990 00	Chemical preparations, n.e.c., n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	868.7	(NA)	(X)	489.4
28990 02	Chemical preparations, n.e.c., n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	360.4	(NA)	(X)	161.3

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

[1]Data reported by all producers, not just those with shipments of $100,000 or more.

[2]For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[3]For 1982, product code 28914 57 was included with product code 28914 98.

[4]For 1982, comparable data are not available because product classes 28916 and 28917 were collected under old product class 28915, Caulking Compounds and Sealants. Total value of product shipments in 1982 for 28915 was $602.8. For additional detail see the 1982 Census of Manufactures report, MC82-I-28H, Miscellaneous Chemical Products.

[5]Data include evaporated salt shipped by establishments classified in mineral industries. For annual information on evaporated salt, rock salt, and salt in brine, see U.S. Bureau of Mines Mineral Yearbook.

[6]For 1982, product code 28995 53 is combined with product code 28995 99 to avoid disclosing data for individual companies.

Table 3. **Materials Consumed by Kind: 1987 and 1982**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987			1982		
		Consumption of materials received from other establishments		Materials made and consumed in same plant (quantity)	Consumption of materials received from other establishments		Materials made and consumed in same plant (quantity)
		Quantity[1]	Delivered cost (million dollars)		Quantity[1]	Delivered cost (million dollars)	
	INDUSTRY 2891, ADHESIVES AND SEALANTS						
	Materials, containers, and supplies	**(X)**	**2 411.9**	**(X)**	**(X)**	**1 562.9**	**(X)**
	Plastics resins purchased from other establishments:						
282133	Polyvinyl acetate, mil lb	**409.7	114.4	(X)	**183.8	61.5	(X)
282106	All other plastics resins, do	*782.0	276.2	(X)	**345.6	192.7	(X)
282104	Plastics resins produced and consumed in the same establishment (quantity only), do	(X)	(X)	(NA)	(X)	(X)	653.2
282202	Synthetic rubber, do	(S)	99.0	(X)	**117.7	77.8	(X)
204605	Starch and dextrin, do	**108.6	23.2	(X)	**106.7	29.0	(X)
286010	Industrial organic chemicals, n.e.c., including synthetic organic	(X)	536.8	(X)	(X)	197.5	(X)
281000	Industrial inorganic chemicals	(X)	*40.4	(X)	(X)	88.5	(X)
291102	Refined petroleum products, including mineral oil, naphtha, solvents, petrolatum, waxes, etc.	(X)	171.5	(X)	(X)	119.6	(X)
140010	Nonmetallic minerals and earths, ground or otherwise treated, used as extenders and fillers (calcium carbonate, talc, silica, kaolin, mica, barite, soapstone, clay, and other clay minerals)	(X)	83.3	(X)	(X)	36.9	(X)
	Containers:						
340001	Metal	(X)	80.1	(X)	(X)	54.2	(X)
260091	Paper and paperboard, including shipping sacks and other packaging supplies	(X)	78.6	(X)	(X)	34.6	(X)
970099	All other materials and components, parts, containers, and supplies	(X)	377.8	(X)	(X)	475.7	(X)
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	450.6	(X)	(X)	194.9	(X)
	INDUSTRY 2892, EXPLOSIVES						
	Materials, containers, and supplies[3]	**(X)**	**301.0**	**(X)**	**(X)**	**255.8**	**(X)**
287312	Ammonia, synthetic anhydrous (basis--100 percent NH_3), 1,000 tons	131.2	15.5	(X)	123.5	14.6	(D)
287314	Ammonium nitrate (basis--100 percent NH_4NO_3), do	(S)	58.2	(X)	322.8	53.6	(D)
287311	Nitric acid (basis--100 percent HNO_3), do	*84.4	9.3	(X)	**16.3	1.9	164.7
281931	Sulfuric acid, except spent acid (basis--100% H_2SO_4), do	**95.1	6.7	(X)	(S)	1.2	(X)
131152	Natural gas used as a raw material, bil cu ft	(D)	(4)	(X)	(D)	(4)	(X)
289215	Water gel and slurry sensitizers, including powdered aluminum and hexamine	(X)	3.7	(X)	(X)	14.8	(X)
289216	High explosives, including PETN, TNT, azides, and fulminates	(X)	8.8	(X)	(X)	16.5	(X)
260091	Paper and paperboard containers, including fiber drums, shipping sacks, and other paper packaging supplies	(X)	8.6	(X)	(X)	9.2	(X)
970099	All other materials and components, parts, containers, and supplies	(X)	4158.2	(X)	(X)	4131.0	(X)
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	32.0	(X)	(X)	13.0	(X)

1987 material code	Material	1987		1982	
		Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 2893, PRINTING INK				
	Materials, containers, and supplies	**(X)**	**1 396.3**	**(X)**	**988.1**
280023	Organic and inorganic pigments, mil lb	206.7	370.6	*158.0	319.2
289501	Carbon black, do	*262.3	59.9	*90.9	31.8
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes, do	*60.7	55.3	105.3	92.9
285101	Paints, varnishes, lacquers, shellacs, japans, enamels, and allied products (includes all ink vehicles and varnishes), 1,000 lb	*355.7	219.1	(S)	115.2
286104	Wood rosin, turpentine, and other wood chemicals, mil lb	69.7	34.1	*40.4	26.3
290010	Hydrocarbon oils and solvents, mil gal	**89.7	100.9	*94.7	97.2
285905	Oxygenated solvents, do	**22.9	23.6	(S)	27.5
340001	Metal containers	(X)	25.3	(X)	22.2
970099	All other materials and components, parts, containers, and supplies	(X)	99.4	(X)	125.3
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	408.1	(X)	108.5
	INDUSTRY 2895, CARBON BLACK				
	Materials, containers, and supplies	**(X)**	**271.0**	**(X)**	**370.5**
291184	Carbon black feedstock, mil bbl	*11.7	188.2	10.9	280.8
131152	Natural gas used as a raw material, bil cu ft	*12.6	28.1	12.3	43.4
260091	Paper and paperboard containers, including fiber drums, shipping sacks, and other paper packaging supplies	(X)	6.1	(X)	3.7
970099	All other materials and components, parts, containers, and supplies consumed	(X)	48.6	(X)	42.6
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	-	(X)	-
	INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.				
	Materials, containers, and supplies	**(X)**	**3 305.7**	**(X)**	**3 007.4**
140107	Crude nonmetallic minerals, including limestone, clay, gypsum, talc, etc., but excluding crude chemicals and nonmetallic minerals	(X)	66.3	(X)	85.0
207020	Fats, oils, greases, and tallow (animal, including lanolin; marine; vegetable, including carnuba and other vegetable waxes)	(X)	188.8	(X)	96.7

See footnotes at end of table.

Table 3. **Materials Consumed by Kind: 1987 and 1982**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.—Con.				
281201	Alkalies and chlorine	(X)	113.2	(X)	85.3
281900	Industrial inorganic chemicals, acids, sodium compounds, anhydrous ammonia, etc., except medicinals	(X)	323.0	(X)	303.0
286101	Wood rosin, turpentine, and other wood chemicals, including tall oil ..... mil lb.	(S)	77.7	(S)	47.7
290001	Refined petroleum products, including naphtha solvents, petrolatum, waxes, etc.	(X)	207.5	(X)	199.3
282103	Plastics and resin materials (synthetic) ..... mil lb.	(S)	90.4	(S)	134.8
286020	Synthetic organic chemicals, not elsewhere classified ..... do.	(S)	379.8	**584.4	263.5
	Containers:				
265001	Paperboard boxes, containers, and corrugated paperboard	(X)	93.9	(X)	88.2
340101	Metal, except collapsible tubes	(X)	59.5	(X)	65.4
970099	All other materials and components, parts, containers, and supplies	(X)	758.2	(X)	791.1
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	947.4	(X)	847.4

[1]For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[2]Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

[3]Total cost of materials purchased and consumed by privately owned and operated plants only; excludes data on materials purchased and consumed by Government-owned, contractor-operated plants.

[4]For 1987 and 1982, material code 131152 was combined with material code 970099 to avoid disclosing data for individual companies.

[5]For 1982, material code 291184 included crude oil and other petroleum liquids which were collected under material code 970099 in 1987.

APPENDIX
Scope and Coverage and Explanation of Terms

GENERAL

The 1987 Census of Manufactures is the 32nd census of manufacturing establishments conducted in the United States. For 1987, it was conducted as part of the economic censuses, which included the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses, under authority of title 13 of the United States Code. Title 13 specifies that an economic census be conducted every 5 years to cover years ending in 2 and 7.

SCOPE AND COVERAGE

Establishment Basis of Reporting

The census of manufactures is conducted on an establishment basis. All manufacturing establishments with one paid employee or more at any time during the year are covered by the census of manufactures. Therefore, a company operating at more than one location is required to file a separate report for each location. This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units which service manufacturing establishments of the same company. Where these auxiliary operations are conducted at the same location as the manufacturing operation, they are usually included in the report for the operating manufacturing establishment.

Use of Administrative Records

From a universe of approximately 350,000 manufacturing establishments in the 1987 Census of Manufactures, approximately 150,000 small single-establishment companies were excused from filing reports. Selection of the small establishment nonmail cases was done on an industry-by-industry basis. A variable cutoff was used to determine those establishments for which administrative records were to be used in place of a census report. The cutoffs were selected so the administrative-record cases would account for approximately 3 percent or less of the value of shipments for the industry. These cutoffs were then adjusted so that all single-establishment companies with less than 5 employees were excluded from the mail canvass, while all establishments with more than 20 employees were included. Where establishments in the 5 to 20 employee size range were included in the mail canvass, an abbreviated census form was frequently used.

For these nonmail establishments, (and a small number of larger establishment whose reports were not received at the time the data were tabulated) data on employment, payroll, and receipts were obtained from administrative records of other government agencies rather than from census forms. The administrative-record information was then used in conjunction with industry averages to estimate the data for these establishments. The value of shipments and cost of materials were not distributed among specific products and materials but were included in the product and material "not specified by kind" (n.s.k.) categories.

EXPLANATION OF TERMS

Number of establishments and companies–A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

All employees–Includes all full-time and part-time employees on the payrolls at any time during the year. Included are all persons on paid sick leave, paid holidays, and paid vacations. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average of those for midmonth payroll periods of March, May, August, and November.

Production workers–Includes workers up through the working-supervisor level engaged in fabricating, processing, assembling, inspecting, receiving, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial, guard services, product development, auxiliary production for plant's own use (e.g., powerplant), recordkeeping, and other closely associated services. Truckdrivers delivering ready-mixed concrete are also included in production workers.

Other employees–Includes nonproduction personnel, including those engaged in the following activities: supervision above working-supervisor level, sales (including driver/salespersons), sales delivery (truckdrivers and helpers), advertising, credit collection, installation and

servicing of own product, clerical and routine office functions, executive, purchasing, finance, legal, personnel (including cafeteria, etc.), professional, and technical employees.

Payroll–Includes the gross earnings for the "employees" defined above, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Respondents were told that in reporting they could follow the definition of payrolls used for calculating the Federal withholding tax.

Production-worker hours–Covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the plant.

Cost of materials–Refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuels consumed, regardless of whether they were purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (a) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year; (b) electric energy purchased; (c) fuels consumed for heat, power, or generating electricity; (d) work done by others on materials or parts furnished by manufacturing establishments (contract work); and (e) products bought and resold in the same condition.

Specific materials consumed (table 3)–In addition to the total cost of materials which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. These inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Establishments consuming less than a specified amount (usually $10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which administrative records were used was estimated as "not specified by kind" (n.s.k.).

Value of shipments and other receipts–Generally refers to received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts such as receipts for contract work performed for others, installation and repair receipts, sale of scrap, and sale of products bought and resold without further processing. Included are all items made by or for the establishment from materials owned by it whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In a few industries, the value of production or value of work completed is used instead of value of shipments. These industries are identified in the introduction and are footnoted in table 1.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, that is, including not only the direct costs of production but also a reasonable proportion of "all other costs" (including company overhead and profit).

Shipments or production of individual products (table 2)–In the 1987 census, detailed shipment information was collected for approximately 11,000 individual products. These products are identified by a seven-digit code and are grouped into approximately 1,500 classes of products, which in turn are primary to 459 four-digit industries. Data at the five-digit product-class level have been collected each year as part of the annual survey of manufactures. Information at the seven-digit level, collected for many industries in the current industrial reports program, is not included in this table.

Value added by manufacture–This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments for products manufactured plus receipts for services rendered. The result of this calculation is then adjusted by the addition of value added by merchandising operations (that is, the difference between the sales value and cost of merchandise sold without further manufacturing, processing, or assembly) plus the net change in finished goods and work-in-process inventories between the beginning and end of the year.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1), value added is adjusted only for the change in work-in-process inventories between the beginning and end of the year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

Value added avoids the duplication in the figure for value of shipments which results from the use of products of some establishments as materials by others. Value

added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

Expenditures for new plant and equipment–Establishments in operation and any known plants under construction were asked to report their expenditures for (a) permanent additions and major alterations to manufacturing establishments and (b) new machinery and equipment used for replacement and additions to plant capacity if they are of the type for which depreciation accounts are ordinarily maintained.

These totals exclude expenditures for used plant and equipment, expenditures for land, and cost of maintenance and repairs charged as current operating expenses. Data for used plant and equipment will be published in the final industry bulletin.

End-of-year inventories–Comprised of (a) finished products; (b) work-in-process; and (c) materials, supplies, fuels, etc. Beginning in 1982, respondents were asked to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Therefore, 1982 through 1987 data for inventories are not strictly comparable to prior-year data.

Specialization and coverage ratios–An establishment is classified in a particular industry if its shipments of primary products of the industry exceed in value its shipments of the products of any other single industry. An establishments' shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). The following ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in table 1 and data on product shipments shown in table 2.

Specialization ratio–Represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio–Represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments, wherever classified.

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